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UNITED STATES DEPARTMENT OF AGRICULTURE

MISCELLANEOUS CIRCULAR No. 33

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SOME TESTED METHODS FOR LIVESTOCK IMPROVEMENT



LIVESTOCK IMPROVEMENT IN THE UNITED STATES

WITH confidence that better livestock will bring satisfaction and many benefits to their owners, I invite the concerted action of farmers, stockmen, and others in adopting methods leading to livestock improvement. The replacement of scrub and inferior sires by good purebreds is particularly desirable. The widespread use of inferior male breeding animals has been for many years a cause of low production per animal and of needlessly poor quality.

The continuance of such conditions is uneconomical and unnecessary. The direct and practical means of improvement is to use breeding animals, especially sires, which are true representatives of breeds developed for a definite, useful purpose.

Livestock improvement has proved very popular, not only with those who produce the animals but with those who help to market them and those who use their products. Indeed, it has become a national movement. It adds to the prosperity of the entire community and increases the palatability of our meats. A sound method that is capable of increasing the returns of farmers in a single county by \$100,000 needs but a fair trial. Let us hasten such improvement wherever livestock are kept.

J. R. MOHLER,
Chief, Bureau of Animal Industry.

SOME TESTED METHODS FOR LIVESTOCK IMPROVEMENT

By D. S. BURCH, Editor, Bureau of Animal Industry, in Consultation with Livestock, Dairy, and Extension Specialists of the Department

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The need for improving livestock in the United States is apparent on almost every hand. Observation at public stockyards shows that only a small percentage of the meat animals are in the highest market grades. Only about 5 per cent of the cattle received at the Chicago market, for instance, grade prime or choice. Similarly, the average milk production of dairy cows is scarcely two-thirds that of some foreign countries, and is less than one-third the average production of well-bred and well-managed dairy herds in the United States. The same general situation as to quality and usefulness applies to horses, mules, sheep, goats, and poultry. There are thousands of excellent herds and flocks to which the foregoing comments do not apply and which are constantly undergoing still further improvement, but the general average quality and productive power is low—much lower than it needs to be in the light of present knowledge of animal breeding, feeding, and management.

The methods described in this circular have improved the quality of livestock in many localities, and they are presented for the information and use of persons who are seeking similar results.

METHODS OF IMPROVEMENT THAT APPLY TO ALL LIVESTOCK

"BETTER SIRES—BETTER STOCK" PLAN

The "Better Sires—Better Stock" plan is designed chiefly to increase the use of good purebred sires, thereby improving the quality of succeeding generations. It is especially desirable for livestock improvement on a county-unit basis. The plan has been in successful operation since October 1, 1919, and at the same date in 1924 had close to 15,000 participants.

The plan involves the use of an enrollment blank on which a person who is interested in improving his stock lists his breeding animals.

The livestock owner must agree to use purebred sires exclusively for all classes of livestock kept, including cattle, horses, asses, swine, sheep, goats, and poultry. The use rather than ownership of purebred sires is the basis for participation in the work.

The blanks when filled out, signed, and countersigned by a county agent (or by two neighbors), are finally sent to the United States Department of Agriculture, Washington, D. C. The department then issues to each person signing a blank a certificate showing his co-operation with the State and with the department in livestock-improvement work. When the farmer requests it, he also receives a

lithographed sign, resembling a metal tablet, entitled "Purebred sires exclusively used on this farm" (fig. 1).

The blank also provides space in which a farmer may request State and Government bulletins, which are sent as a means of improving his understanding of methods of animal breeding, feeding, and care.

A valuable result of the better-sires plan is the influence which improved breeding in one class of livestock

has been shown to have on improvement in other classes. Cases are on record in which persons who had noticed the improvement in poultry, for instance, applied the same methods to cattle and horses.

Records show also that the average livestock owner who takes up this plan soon obtains many purebred females in the different classes of stock. By mating them with his purebred sires he gradually becomes a breeder of purebreds as well as grades.

PROPORTION OF MALE TO FEMALE BREEDING STOCK

The reason for the emphasis which the "Better Sires—Better Stock" plan places on improvement of male animals is evident from the following ratios showing the proportion of male to female breeding stock. The ratios are based on about 1,500,000 animals, including fowls.

Class of stock	Ratio of sires to dams	Class of stock	Ratio of sires to dams
Cattle.....	1 to 17	Goats.....	1 to 25
Horses.....	1 to 22	Chickens.....	1 to 21
Swine.....	1 to 12	Other fowls (ducks, geese, turkeys, etc.)..	1 to 8
Sheep.....	1 to 29		



FIG. 1.—Barn sign granted to persons who place their livestock-breeding operations on a purebred-sire basis. It measures 10½ by 14 inches and is lithographed in colors

LITERATURE FURNISHED

The United States Department of Agriculture furnishes the blanks, certificates, signs, and a wide variety of bulletins, posters, and related literature without cost. The department issues quarterly a summary of the progress of the work as well as press material concerning new information on livestock-improvement work.

The "Better Sires—Better Stock" plan has developed the fact that purebred livestock are considered by their owners as having an earning power about 40 per cent greater than that of scrubs. This is based on utility alone, apart from breeding or sale value. In the use of feed the superiority of improved animals over common livestock is about 39 per cent greater from a financial standpoint. This is the average estimate of nearly 500 farmers who were in a position to make comparisons.

In addition to literature giving a complete discussion of the foregoing facts, the department distributes, to county agents and others interested in extension work, samples of material likely to be of use in conducting such campaigns. The supplementary material includes a sample speech, county livestock-survey blank, lists of available motion pictures, and lantern slides, outline of scrub-sire trial, and pictures of livestock.

PROCEDURE FOR OPERATING PLAN

The "Better Sires—Better Stock" plan is in charge of a committee of which the Chief of the Bureau of Animal Industry is chairman. The committee works in cooperation with the Office of Co-operative Extension Work and with livestock specialists and other extension workers in the various States and insular possessions. Enrollment does not necessitate any heavy financial outlay, since a person who merely patronizes good sires is as eligible for enrollment in the campaign as those who decide to purchase purebred male breeding animals.

The procedure for putting the plan in operation is as follows:

(1) Apply to the State extension director or to the United States Department of Agriculture, Washington, D. C., for copies of literature, blanks, and detailed plan. Estimate the number of livestock owners in the county and obtain an equal number of enrollment blanks.

(2) Using the survey blank as a guide, make a county-wide survey and obtain definite facts on the quality of breeding stock that is being used.

(3) Using the results of the survey, make a study of the livestock in the county, with regard to the quality of breeding stock and the possibility of improving it.

(4) Make the results public, either through speeches, discussion at small gatherings, or in local papers.

(5) Distribute enrollment blanks among livestock owners, and obtain as many pledges as possible to use purebred sires exclusively in the future.

(6) Make a record of all requests for purebred sires, and study means for financing and obtaining the kind of animals desired. Two livestock associations in Connecticut have used a "sire-approval"

plan for the purchase of male breeding animals. A committee of five passes on the merits of sires purchased.

(7) Arrange for an event, such as a combination scrub-sire trial and purebred-sire sale. This event should be a culmination of the foregoing activities, and the beginning of systematic livestock improvement.

(8) Visit farms of persons who have signed enrollment blanks and thereby placed their livestock-improvement activities on a purebred-sire basis. On these visits the certificates of membership and the farm signs may be presented and breeding work discussed.

(9) Keep records of purebred breeding stock introduced into the county, or obtained within the county and used on farms formerly giving little attention to improving livestock. The results should be made public either at meetings or through the press in a judicious manner.

(10) In case no county livestock-breeders' association exists, the organization of one should be planned. Meanwhile effort should be continued to enroll in the "Better Sires—Better Stock" plan at least 100 livestock owners, thereby placing the county on the honor roll of counties having this distinction. Forty counties were on the list October 1, 1924.

TYPICAL ACTIVITIES

The following circular letter, sent by a county agent to livestock owners in the county, shows how livestock improvement was hastened in one case. This letter is considered applicable to any locality.

FLINT HILL, VA., May 6, 1924.

DEAR FRIEND: It has been proved beyond a doubt that a good type purebred bull, ram, or boar will increase the value of your stock from 25 to 50 per cent over the scrub sire. Then why not castrate that narrow, shallow, and leggy animal, if you have one, and pay a little more for a broad, blocky one that will give you what your heart craves and what the market demands and will pay the most for? Why put good feed into a poor type, unprofitable, and uneconomical feeder?

Help make Rappahannock a better livestock county by joining the "Better Sires—Better Stock" association. Answer the questions at the bottom of this letter, fill in the enrollment blank, and return both to me in the self-addressed envelope, which needs no stamp. Read the booklet on the "Better Sires—Better Stock" campaign. It will do you good.

Watch the Guide, Star, and Record [local papers] for the Honor Roll of purebred-sire users in the county. It will be published the first week in each month. Will your name be there?

Yours for better livestock,

SAM D. PRESTON,

County Agent, Rappahannock County.

Kind of purebred livestock for sale.....

Kind of purebred livestock you would like to buy.....

The manner in which another county improved its livestock is shown in the following account based on a report from the county agent:

How Pulaski County, Va., became champion better-sires county

The work of getting enrollments was started in the early spring of 1920. Signers were secured mainly by the agent himself. (J. H. Meek was county agent when the campaign started.) Personal visits were made for that purpose; livestock owners were accosted at meetings, on the street, in the county

agent's office. In fact, no chance was lost whereby a bona fide enrollment could be obtained. Some of the blanks were mailed to certain farmers, who filled them out, signed them, and returned them. The majority, however, were obtained by the "personal touch."

By August 31, 1920, more than 300 enrollments had been received. The attention of the agent then was directed more toward aiding those who had already enrolled than toward securing more enrollments. However, a few additional enrollments were received from time to time. In the meantime the work of getting the sires distributed to those who had enrolled made rapid progress. In the spring of 1923 another intensive campaign for more enrollments was made for a few weeks, which resulted in over 100 additional enrollments.

Livestock clubs among the boys and girls have been influential in demonstrating the superiority of well-bred livestock to the farmers of the county. Purebred calf, baby beef, purebred pig, and fattening pig, and standardbred poultry clubs have been conducted in the county since the beginning of the campaign.

A few figures show more plainly some of the results of the campaign. The following table shows the number of purebred livestock of certain classes in the county on October 1, 1919, contrasted with similar totals for October 1, 1923:

Purebred breeding stock	Oct. 1, 1919	Oct. 1, 1923	Increase	
			Number	Per cent
Horses: Stallions.....	10	10		
Cattle:				
Beef bulls.....	38	110	72	189
Beef cows.....	89	212	123	138
Dairy bulls.....	5	11	6	120
Dairy cows.....	22	50	28	127
Swine: Boars.....	22	150	128	582
Sheep:				
Rams.....	25	160	135	540
Ewes.....	290	550	260	90
Total.....	501	1,253	752	150

These figures show an increase, in four years, of 135 purebred rams, 260 purebred ewes, 128 purebred boars, 72 purebred beef bulls, 123 purebred beef cows, 6 purebred dairy bulls, and 28 purebred dairy cows. These increases range from 90 to 582 per cent and average 150 per cent.

The standardbred-poultry business has increased in the county enormously during the last four years. The increase in standardbred males of chickens, turkeys, ducks, etc., is conservatively estimated at 750, and the increase in number of standardbred females is probably 3,500.

I have been county agent here in this county for over three years, and I have yet to find a stallion which is being used in the county which is not registered or eligible to be registered.

A prominent farmer of the county said recently, "The quality of hogs in my district has improved 85 per cent during the past few years, due to the influence of the livestock-improvement work done by the county agents."

While this county can not yet boast of being a scrub-free county, there are now a number of sections of the county containing several square miles each in which there are no scrub or grade bulls used and these same sections are dotted with purebred bulls of good quality.

ERNEST C. GRIGSBY, *County Agent*.

Ohio has been one of the most active States in livestock improvement under the better-sires plan. Of noteworthy interest, according to a report of the State director of extension, has been the replacement of grade and scrub sires and the increased use of purebred sires on farms where none of that class existed before. Records show that 220 grade or scrub sires were replaced by purebreds in 1923, and that 391 purebred sires were introduced on farms where no sires of that class of livestock previously existed.

From a financial point of view, a report from Kentucky indicates that the use of purebred sires may be expected to bring fully \$100,000 additional returns to farmers of a county. This calculation is based on a comparison between livestock returns obtained by farmers in Oldham County, Ky., and average returns in two adjoining counties. The three counties, according to the report, lay like a test plat, with Oldham in the center. At the time of the report Oldham County had 248 purebred-sire users and was active in livestock improvement. The other counties, Trimble and Shelby, were less progressive in this respect. Calculations by county agent Gordon B. Nance, of Oldham County, show the following totals as representing the added annual income to farmers of the county, due to improved stock: Cattle, \$47,880; sheep, \$14,740; hogs, \$31,248; poultry, \$35,200; total for all classes, \$128,968.

All of the basic figures used in the calculations were from county-agent sources and are believed to be conservative. But even the round number, \$100,000, represents a rather satisfactory premium to livestock owners of the county for their enterprise in raising high-class animals.

RESULTS TO BE EXPECTED

Based on experience in localities where the "Better Sires—Better Stock" plan has been actively used, the following results may be expected within a few years:

An increase of from 100 to 500 per cent in the number of purebred sires, with an average increase of about 150 per cent in purebred breeding stock of all kinds.

An improvement of fully 50 per cent in the general quality of market stock.

About 40 per cent increase in financial returns from the farm's livestock.

Greater ease in selling surplus stock profitably for breeding purposes.

An increase of the number of local breeders' associations and greater interest in stock raising.

BOYS' AND GIRLS' CLUBS

The terms "Boys' and Girls' Clubs," "4H Clubs," and "Young Farmers' Clubs" refer to clubs organized by extension workers for interesting young people in better farming and home making. Among the most popular livestock clubs have been the boys' and girls' pig clubs, calf clubs, and poultry clubs. Club work with livestock also includes sheep and horses, though these animals have received less attention than the others mentioned.

The objects of such clubs are:

To stimulate interest in raising better animals by the use of improved breeding, feeding, and management.

To teach boys and girls how to judge animals and select them for breeding or market purposes.

To encourage the use of home-grown feeds, especially forage crops, thus producing animals more economically than when high-priced purchased feeds are used.

To furnish practical instruction in sanitation and prevention of disease.

To give boys and girls a means of earning money for themselves while at home.

To give them a practical insight into the business side of farm life.

Boys' and girls' clubs are organized in county units under the general supervision of State extension services and of the Office of Cooperative Extension Work, United States Department of Agriculture. County extension agents are prepared to furnish full information concerning the organization of such clubs.

Activities include meetings at which the work is discussed either by the county agent or by a livestock extension worker. Animals raised by members of clubs are eligible to compete at shows, fairs, and exhibitions in competition with animals raised by similar clubs. Suitable prizes and inducements in the form of trips or special honors are generally offered.

Each club member must own at least one animal which must receive his personal care. He must keep records of weights, production, feeds, and breeding dates, and make reports on approved record blanks.

Poultry clubs include culling demonstrations and contests. Tonlitter contests, discussed more fully later, are an important adjunct to pig-club work.

RESULTS

The work of boys' and girls' livestock clubs is plainly in evidence throughout the country and especially at fairs and expositions at which displays of animals raised by club members have become an important feature. Many thousands of boys and girls are active in club work every year and have produced some exceptionally fine animals. The educational nature of boys' and girls' club activities with livestock makes results difficult to measure in actual figures, but it is highly influential in the improvement of domestic livestock. The work has received the support and indorsement of the agricultural press, breeders' associations, bankers, and civic organizations. From such clubs it is just a step to active membership in similar organizations for adults. Information and literature on the work of various kinds of livestock clubs may be obtained from county extension agents, States extension directors, and the Office of Cooperative Extension Work, United States Department of Agriculture.

INTENSIVE CAMPAIGNS

Livestock extension workers sometimes prefer to begin livestock-improvement work with intensive campaigns. Such campaigns involve the appointment of committees, the preparation of a schedule for meetings, a survey of local livestock, extensive advertising, picnics, and demonstration features. The campaigns relate most commonly to one kind of stock in order that there may be a concentration of effort where the need for improvement is greatest. Dairy-bull campaigns, for instance, have been among the most popular. The committee usually decides how many purebred dairy bulls the community should introduce to replace scrub and other inferior bulls.

Such intensive campaigns are valuable for stimulating interest in better livestock, and, when conducted by experienced leaders, they are followed by permanent benefits through the adoption of one or several of the more conservative methods described in this circular. Plans for organizing and conducting intensive dairy-bull campaigns may be obtained from the department. With appropriate modifications, the plan can be used for other kinds of stock.

DEMONSTRATIONS

One of the most effective means of livestock improvement in a locality is through actual demonstrations with live animals. Agricultural periodicals and literature contain many specific descriptions of such demonstrations, among which are the following:

Pig-growing contests.—Pigs of the same age, size, and weight, but of different breeding, are raised in a pen or field where the public



FIG. 2.—A scrub bull entering the "outlaw car." This car was part of a demonstration train from which purebred bulls were exchanged for scrubs in the interests of livestock improvement

may observe them growing. When raised under the same conditions a purebred pig may be expected to gain weight more rapidly and produce a greater net profit over cost of feed than a scrub pig.

In a Florida community, for instance, where a good many farmers believed in the superiority of the razorback hog, the county agent selected a man who would be honest in feeding and weighing and who had the confidence of his neighbors, and placed on his farm a razorback, a grade, and a purebred pig for fattening. They were all put in pens side by side and fed the same kind and amount of feed. In 90 days the purebred had gained 87 pounds, the grade 73 pounds, and the razorback 45 pounds.

Dressing-meat demonstration.—A firm of local butchers has made a practice of displaying a beef carcass in the shop window, giving on a card the age, live weight, dressed weight, and percentage of dressed meat. The butchers have found that this method convinces producers that they get more live weight and the butcher gets more dressed

weight from well-bred stock than from inferior stock of the same age.

Demonstration at auction sales.—An experienced auctioneer having a broad knowledge of livestock has used auction sales as a means of pointing out the superior merits of well-bred animals over inferior stock. This auctioneer reports that such an educational feature at sales enhances rather than detracts from the interest of those in attendance. The better prices paid for superior animals is conclusive evidence of their superiority from a utility standpoint.

The scope of demonstrations is practically unlimited. The main point should be to obtain animals uniform in all respects except the quality for which they are being compared. Carefully kept records add to the value of the demonstrations and make possible the use of the data in addresses and press articles.

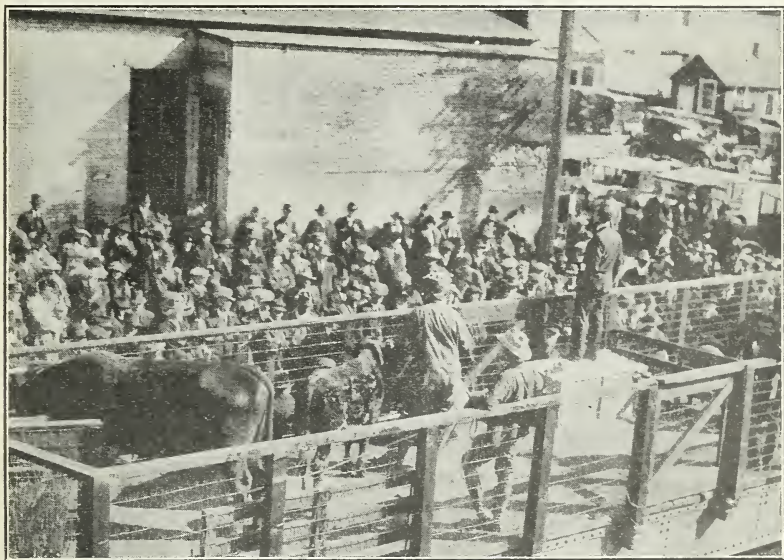


FIG. 3.—A traveling livestock exhibit mounted on a railway flat car. A speaker is discussing the types of animals exhibited

EXHIBITS

Exhibits are an effective and widely used means for encouraging livestock improvement. A simple exhibit may include merely a few posters. A more elaborate one consists of live animals selected to bring out interesting comparisons. Still more complete and pretentious exhibits are demonstration trains which carry educational display matter, live animals, a corps of speakers, and sometimes business agents who distribute purebred animals along the route. Frequently purebreds are exchanged for scrubs on attractive financial terms (fig. 2).

The chief value of exhibits is the large number of persons who may be reached, particularly at fairs and expositions. When personally demonstrated by an expert (fig. 3), exhibits become still more valuable. A creditable exhibit brings out one or, at most, a few

good points and does not attempt to give detailed information on animal breeding or livestock improvement. To plan and prepare a livestock exhibit of pictorial nature requires some proficiency in art work, lettering, and advertising. Exhibits are best prepared by persons who have natural inclinations and ability along those lines. Clearness, brevity, and attractiveness are desirable. Crude exhibits probably do more harm than good.

Lantern slides and motion pictures are useful adjuncts in making exhibits interesting. The United States Department of Agriculture has several motion-picture films and sets of lantern slides dealing with the advantages of purebred sires and merits of improved livestock. The material is lent to responsible persons who will pay transportation charges. Photographs of exhibits of various kinds (fig. 4) may be obtained on application to the department. These are useful to persons endeavoring to prepare exhibits but whose experience in that field is limited.

USE PUREBRED SIRES AND CREATE A BETTER MARKET FOR YOUR FEED.

• GOOD PUREBRED SIRES PRODUCE GROWTHY OFFSPRING.

• GROWTHY OFFSPRING MATURE EARLY.

• MORE FEED GOES INTO MARKETABLE MEAT AND LESS INTO MERE MAINTENANCE.

Barback Stock Takes About 2 Years to Mature.

Scrub Cow Left... Scrub Bull Right... Will-Bred stock is ready for market earlier than Scrub and brings better prices.

Purebred Hogs reach market size within 8 months and good grades grow nearly that fast.



FIG. 4.—Portion of department exhibit in form of a panel 4 by 8 feet, dealing with livestock improvement

Exhibits and demonstrations are methods which may be used in connection with any of the plans for livestock improvement. They are as suitable for a ton-litter contest, for instance, as for a comprehensive campaign including all classes of livestock.

SCRUB-SIRE TRIALS

An effective and popular method of encouraging better livestock in a locality is a scrub-sire trial. At a typical event of this kind a scrub bull, boar, or other sire is tried before a jury of farmers. Such trials (fig. 5) are arranged for by county agents, officers of livestock-breeding associations, or others active in livestock improvement. Scrub-sire trials are commonly followed by a sale of purebred livestock. Music, a barbecue, or entertainment features are sometimes included.

Participants are local farmers, lawyers, county officials, and extension workers. Such participation gives opportunity for a full discussion from many viewpoints of the merits of improved and the drawbacks of inferior animals. In most cases the animal is found

guilty of such charges as vagrancy or larceny and is sentenced to death. A funeral oration, at which the local orator sums up the facts presented at the trial, may be a part of the event.

An outline for conducting a scrub-sire trial, together with photographs taken at a typical successful gathering of this kind, may be obtained on application to the United States Department of Agriculture, either direct or through State extension offices.

LIVESTOCK-BREEDERS' ASSOCIATIONS

National and State livestock-breeders' associations in the United States number more than 800, and there are probably a larger number of county and local associations. The purpose of a breeders' association is that of organization for mutual interest. Its chief

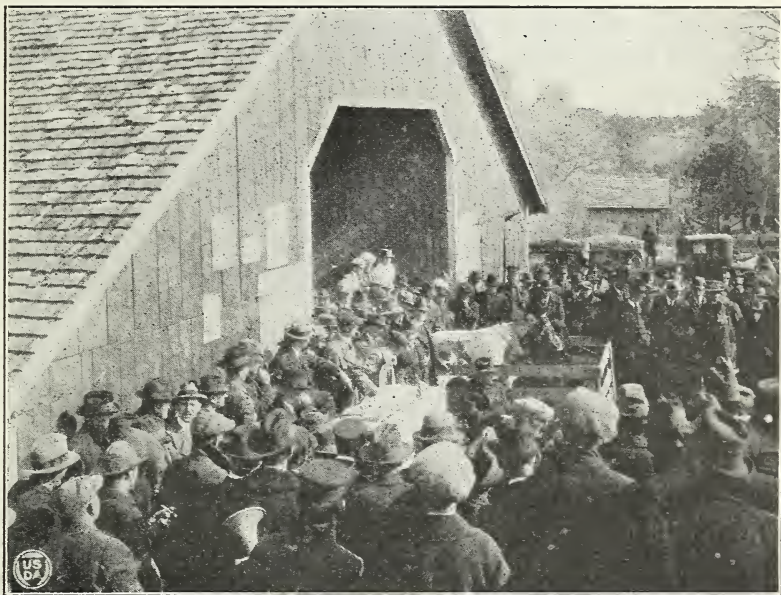


FIG. 5.—A scrub bull "in court." Mock trials are effective means of ridding a locality of scrub sires, with the result that livestock is improved

activities are the buying and selling of improved animals, joint efforts to advance the interests of the breed or breeds selected, study of pedigrees and breeding methods, and educational activities. The various breeds of livestock are represented by breed organizations, which maintain suitable registers or similar records of purebred breeding animals. These organizations are supported principally by fees charged for registration and transfer of animals. In addition to the national organizations there are auxiliary State organizations.

An active and well-managed breeders' association contributes to the standing of a community as a center for good livestock. Through their associations some localities have become nationally prominent as centers for various breeds. Buyers find it more satisfactory to travel long distances to such a locality, when they are

in need of several carloads of stock or even of a few choice animals, than to attempt to assemble the desired number of animals from over a large territory.

Livestock owners who are not members of such organizations should find membership desirable and helpful. It means personal contact with experienced breeders, resulting in the exchange of experiences and various financial benefits. Breeders' associations are extremely important in the development and distribution of improved livestock. Lists of livestock-breeders' associations and their officers are maintained at most agricultural colleges and may be obtained on application to them or to the Department of Agriculture.

COUNTY-SIRE-SALES PLAN

The improvement of livestock in Tennessee has been hastened effectively by a system of county-sire sales. The novel plan is described as follows by the extension specialist in animal husbandry of that State:

The sales are made of beef bulls, dairy bulls, boars, and, if a few of the breeders can contribute rams, we have found it feasible to put them in. The sale is advertised extensively within the county, preceded by articles on better sires in the county newspapers together with a small advertisement and by means of posters. In Tennessee we prefer the county sire sale instead of holding a sectional sale or centralized State sale, due to the fact that it is possible to concentrate more; farmers are less likely to attend a centralized sale and ship males any great distance. We have disposed of as many as 20 to 60 head of sires in county sire sales.

LEGISLATION AND TAXATION

The value of legislation in bringing about livestock improvement appears to depend chiefly on the sentiment back of it. Most of the State laws dealing with the question are drafted in a manner aimed to remove inferior sires from public service or from public ranges.

E. W. Sheets, chief of the Animal Husbandry Division, has made a close study of such laws and points out that "these laws, particularly in the Western States, have been one of the most influential agencies at work for the improvement of livestock. Without such laws the West—the great cattle-producing region of the country—would not be producing the good quality of livestock it is today." In general, the laws require the use of purebred bulls of beef type on open ranges, in some cases specifying the number of bulls in proportion to cows.

"Although," Mr. Sheets continues, "seven of the Western States (Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Wyoming) have legislation against the use of scrub bulls on the range, only three (Idaho, Oregon, and Utah) have actually passed what may be termed a strictly purebred-bull law, and of these three only one (Oregon) has a law worded so as actually to accomplish the object for which it was enacted.

"Various points have naturally come up in regard to the merits and demerits of such laws. While registered sires have come to be recognized as the best means of improving livestock, the man who purchases good bulls for service on the range knows that his neighbor will get the use of them. This situation is improved, however, by

cooperative agreements among ranchers to purchase good bulls at almost the same price per head. An objection sometimes made to the laws is that they shut out from use sires that are purebred but not registered; but this contention is scarcely sound. Those who have failed to keep records can not attempt to hold back advancement in the range industry as a whole."

Among the Eastern States, West Virginia has a comprehensive purebred-sire law. Briefly, legislation must be regarded as an extremely potent means of improving livestock. But in final analysis it is only the expression of public sentiment. Somewhat akin to legislation is the effect of taxation on the quality of livestock raised in a locality.

In response to an inquiry from the secretary of an assessment commission in Connecticut, the United States Department of Agriculture advises a policy of assessing purebred cattle at little, if any, higher than grade cattle for the purpose of local taxation.

The reply of A. T. Semple, a livestock specialist of the Bureau of Animal Industry, on this question, contains the following opinion: "Purebred cattle should be assessed little, if any, higher than grade cattle for the purpose of local taxation, lest some one be discouraged in keeping good cattle, which are of considerable value to a community on account of their ability, in most cases, to improve the common stock and thus increase the wealth of the community. The Department of Agriculture is trying to encourage farmers to keep good purebred cattle. Regardless of their market value as purebreds, their value for improving the common stock of the country is being gradually increased as improvements are being made by selective breeding. Consequently, every reasonable effort should be made to encourage their production."

FEEDING SERVICE

Livestock improvement naturally includes the feeding and care of animals as well as their breeding. To render assistance in these fields the Department of Agriculture offers special services in addition to bulletins and posters.

One of the principal helps in feeding is a question sheet attractively printed in two colors, which farmers may obtain from their county agents, State agricultural colleges, or from the Department of Agriculture, Washington, D. C. On the feeding question sheet a farmer outlines his problem briefly and describes his stock and available feeds. The sheet is designed to enable a farmer to give sufficient information, in brief form, to make additional correspondence unnecessary. This saves much of the effort and time of letter writing.

By the aid of the feeding question sheet and literature on feeding many persons having problems will be able to solve them without any other assistance. But in case the opinion of a trained specialist is desired, the sheet provides for such aid. The farmer first fills out the blank and then gives it, or sends it, to his county agent, who is the joint extension representative of the State agricultural college and of the Department of Agriculture. The county agent then makes his recommendation toward the solution of the problem in the space provided. If there is no county agent, the farmer should send the feeding question sheet to his State agricultural college.

Depending on the nature of the problem or the option of the State director of extension, the sheet will either be answered at once by a livestock specialist of the college or be referred to the Department of Agriculture.

The department will answer all feeding questions referred to it by the States. For the most part such questions are expected to include problems of regional or national character, or those that relate to experimental feeding work which the department has already done or is conducting.

A vest-pocket-size handbook entitled "A Handbook for the Better Feeding of Livestock" has been prepared by department feeding specialists for free distribution to farmers who desire a handy-sized set of simple rules and reference tables to be followed in feeding the different classes of farm animals. The handbook contains feed requirements of animals, analyses of feeds, feeds to substitute for other feeds, and simple feeding instructions which will enable farmers to understand the principles of better feeding and to fit their own practice to conditions on their farms. This handbook will be sent on request.

BUILDING PLANS AND OTHER SERVICES

To aid in the proper housing and care of farm animals and poultry the Department of Agriculture furnishes interested persons with plans of buildings and bills of materials needed. Some of the plans are in blue-print form; others are published in bulletins. The plans available also include bull pens, breeding racks, and shipping crates.

In a broad sense, livestock improvement includes also such matters as sanitation, control of parasites and diseases, and many other production problems. The McLean County system of swine sanitation, named after McLean County, Ill., where the plan was first used, is an example of a definite plan for sanitation in raising hogs. Its original object was the control of roundworms, but experience has shown that it brings many additional benefits. For detailed information on the control of parasites and animal diseases the reader should make selections from the published lists of Farmers' Bulletins or address the department, stating definitely what information is desired.

METHODS OF IMPROVEMENT THAT APPLY TO SPECIAL CLASSES OF LIVESTOCK

COW-TESTING ASSOCIATIONS

A cow-testing association affords a plan for studying the production of dairy cows and keeping a systematic record of each cow in a herd, so that the unprofitable ones may be identified and eliminated. It also provides other cooperative advantages. These associations originated in Europe, where they worked so well that they have been introduced with some modifications into the United States.

A typical cow-testing association has a membership of 26 dairy-men. This number enables the cow tester to visit the farm of each person once a month, there being no work done on Sundays. The cow tester is an experienced dairyman who, at each visit, weighs the milk, tests it for butterfat content, and also makes a record of the quantity of feed consumed by each cow. He stays at the farm of each member of the association a full day once a month. From the figures obtained

he calculates the quantity of feed each cow consumes for the entire year, as well as the quantity of milk and butterfat she produces.

Cow-testing-association records also enable a dairyman to know whether a cow will produce more liberally when fed more liberally, and aid the owner in determining at what point of production each cow makes most profitable use of her feed. Cow-testing associations frequently bring out the fact that the elimination of the poorer cows will result in greater profits from a smaller herd than were formerly obtained from the entire herd. Associations commonly hold monthly meetings for the discussion of topics of interest to dairymen. Dairy periodicals also publish the records of cow-testing associations, thereby enabling members and others to study the results.

The Department of Agriculture has been largely instrumental in encouraging the organization of cow-testing associations in various States. Actual formation of such organizations is generally in cooperation with State authorities. The department is prepared to outline the method of procedure and to furnish record books.

A cow-testing association should be a permanent organization, having a constitution and by-laws, a board of directors, and officers elected in a systematic and businesslike manner. The expenses of cow-testing associations are defrayed by quarterly dues, based on the cost of conducting the work. Distribution of expense among the members may be in proportion to the number of cows tested, on a herd basis, or according to some other plan agreeable to the members. The amount of such dues is generally fixed by the board of directors. The association also should have a central office and place of business. The number of cow-testing associations in the United States, July 1, 1924, was approximately 730.

Among the results to be expected from membership in a cow-testing association are the following:

Definite information regarding the earnings of each cow in the herd.

Relation between quantity of milk produced and value of feed consumed.

Relative value of cows, some of which give a large flow of milk for a long period, whereas others give a large flow for a shorter period and then decline in yield rather quickly.

Variation in richness of milk yielded by different cows and at different times of the year.

Information on the feeding of dairy cows.

Another advantage resulting from membership in a cooperative organization is the development of dairying in the locality, with resulting benefits in marketing and transportation services.

The most carefully obtained records of dairy-cow production are those resulting from official testing. This method which is applied chiefly to purebred cows, is known as advanced-registry or register-of-merit work. It is conducted by the various breed associations under the supervision of agricultural colleges.

COOPERATIVE BULL ASSOCIATIONS

Cooperative bull associations are formed by farmers for the joint ownership, use, and exchange of purebred bulls which they could not own individually without excessive expense. The purchase

price and cost of maintenance are distributed according to the number of cows owned by members, thereby giving each member an opportunity to build up his herd at minimum expense (fig. 6).

A bull association generally is made up of three or more divisions known as "blocks." The purpose of the blocks is to provide for the transfer of a bull from one community to another every two years, thereby avoiding inbreeding.

The business of a bull association is handled by a board of directors who select and buy bulls, arrange for a man in each block as keeper, and provide a safe and satisfactory place for keeping the bull in each block. All the bulls belong to the association as a whole and not to any separate block. The directors may sell any bull that becomes unsatisfactory and replace him with a better one. All bulls in an association are of the same breed, and the Department of Agriculture recommends that, for dairy breeds, they be de-



FIG. 6.—A young purebred bull owned by a cooperative bull association

scended from ancestors of average butterfat records of at least 400 pounds per year.

A typical bull association is composed of from 15 to 30 farmers and jointly owns about five bulls, one bull being assigned to each of five blocks. Usually, from 50 to 60 cows belong to the farmers in each block.

Cost of membership is about \$10 per cow. Thus, a farmer owning five cows would pay in \$50 and have the use of a high-class, purebred bull at an average cost below that of the ordinary scrub bull.

The Department of Agriculture encourages the formation of cooperative bull associations, particularly in localities where there is a well-developed spirit of cooperation. It has several specialists experienced in organizing bull associations. These specialists are ready to supply information by letter, literature, or personal visits. State extension workers, for the most part, are also able to render assistance in organizing bull associations.

Bull associations have existed in Europe for a long time and in the United States since 1908. In 1923 there were 218 active bull associations in the United States, with a total membership of 6,881 farmers, owning 956 purebred bulls. More detailed information on bull associations is contained in Farmers' Bulletin 993, Cooperative Bull Associations, and in supplementary circulars, all of which may be had free on request.

STALLION REGISTRY

The improvement of horses is being aided by stallion registry, a subject with which all horse owners should be familiar. Stallion registry is based on State laws which provide for supervision of stallions offered for public service. In some States the stallion-registry board is a branch of the State department of agriculture; in others it is connected with the office of the State veterinarian, and in still others it is supervised by the State college of agriculture. The boards are also known as stallion-enrollment boards, boards of stock-inspection commissioners, livestock-registry boards, and similar terms.

The principal duty of the board, through its officers, is to issue certificates authorizing owners of stallions which measure up to requirements to offer them for public service. The certificate in most cases must be posted on the premises where the stallion is kept and describes the animal with respect to breed, soundness, and other matters pertaining to its value. Jacks are registered and licensed in a similar manner.

The intent of stallion enrollment is to eliminate from public service inferior stallions and jacks and to enable farmers and mare owners to know the quality of stallion that is being patronized.

Stallion registration is conducted systematically in about 22 States. Latest figures show the registration, under the form of registry described, of about 20,000 stallions and about 5,000 jacks. About seven-eighths of the stallions and three-fourths of the jacks registered were purebreds. In recent years the proportion of purebred stallions and jacks kept for public service has gradually increased, but the total number of stallions and jacks kept for public service has shown a decline.

Detailed information concerning stallion enrollment and the horse-breeding situation may be obtained on application to the Bureau of Animal Industry, United States Department of Agriculture, which issues an annual report in mimeographed form. The report includes names and addresses of State and National officials in charge of stallion enrollment and registry, likewise a list of recognized pedigree-registry associations.

GOVERNMENT HORSE-BREEDING ACTIVITIES

In addition to the registry of stallions already outlined, the War Department and the Department of Agriculture maintain stallions which are available for public service.

The War Department owns about 300 stallions, chiefly of the riding type. The horse-breeding activities are divided into five zones, headquarters of which are in the following cities: Sacramento, Calif., Fort Reno, Okla., Kansas City, Mo., Lexington, Ky., and

Colorado Springs, Colo. The stallions are located in about 41 States, the number of studs varying from 1 to 12 in most States. Texas has much the largest number, there being 36 studs in that State under Army supervision. The organization is known as the Remount Service, Quartermaster Corps, War Department. Information may be obtained by addressing the commanding officer of the corps at the points mentioned and also at Front Royal, Va.

The Department of Agriculture maintains Morgan stallions available for public service at its Morgan Horse Farm, Middlebury, Vt. At the Wyoming Horse Breeding Station, Laramie, Wyo., it has a stud of horses of the general utility type.

The department is making studies of farm horses with respect to their efficiency for power compared with motor power. It also is prepared to furnish current information on horse-replacement needs of various States and general information on the breeding, training, feeding, care, and management of horses.

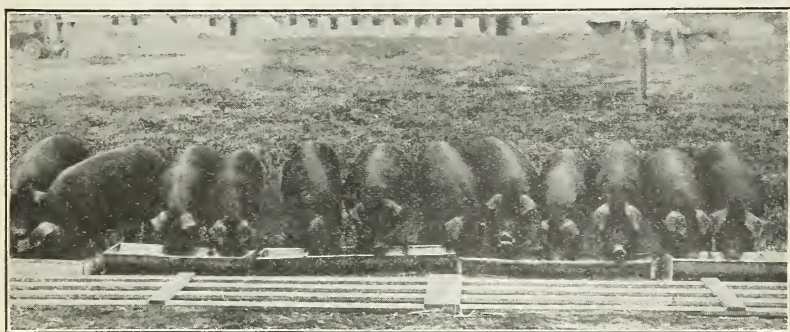


FIG. 7.—A ton litter. The 12 pigs in this litter weighed 2,910 pounds when 180 days old

TON-LITTER CONTESTS

Ton-litter contests, first started in Indiana and later used in numerous other States, involve the effort to raise a litter of pigs that will weigh a ton or more at 6 months of age. Contestants are required to apply to the State official in charge of the contest for membership, and must keep records of the breed of sow and boar, feed of pigs, and supplementary information. The young pigs are identified by ear-marks, and the litter is inspected by a committee which examines them shortly after birth and weighs them when 6 months old (fig. 7).

Successful participation in a ton-litter contest not only involves the selection of a prolific and well-bred sow, a well-bred boar, and proper feed, but requires skillful management throughout. Experience has shown that the majority of ton litters are sired by purebred boars and managed in accordance with modern principles of feeding, sanitation, and methods of preventing mortality among the pigs. Prize winners are awarded medals or other suitable recognition of proficiency. Ton-litter contests have proved the truth of the paradox "You win even if you lose." That is, even the contestants who fail to reach the required 2,000-pound goal benefit by the effort, since the pigs are practically as good and profitable market animals as those which have made greater gains.

Ton-litter contests are supervised in most States by a livestock specialist from the State agricultural college, working in cooperation with the State swine-growers' association. Most of the participants are boys and young men. The pigs may be of any breed.

Typical results from ton-litter contests are a marked improvement in methods of swine management; gains much more rapid than are obtained by the average swine-raising methods; improved methods of feeding; and better knowledge of management obtained through study and personal contact with livestock specialists.

THOUSAND-POUND CALF CLUBS

The success of ton-litter contests has resulted in the development of somewhat similar contests with beef calves. A 1,000-pound calf club involves the effort to raise a beef calf which weighs 1,000 pounds when a year old. This kind of club is of more recent development than ton-litter contests and only a few have been conducted. The principle, however, is considered sound. A 1,000-pound calf produces a class of product known as baby beef, and ability to cause a calf to reach that weight at a year old means exceptionally good breeding, feeding, and management.

RAM RINGS

A ram ring is an organization for the convenient and economical use of purebred rams owned in a community. It is organized along the same lines as a bull association, but is generally of a more informal character and is seldom incorporated. The purpose is to make available the services of high-class, purebred rams for persons who have a few sheep and who desire to cooperate in the joint ownership and use of rams. Information on ram rings may be obtained from State extension directors or from the Department of Agriculture.

POULTRY-IMPROVEMENT ACTIVITIES

Improvement of poultry is brought about by a variety of means, such as trap nesting, culling, and standardization.

Trap nesting involves the use of a type of nest which closes when a hen enters it. It enables the flock owner to identify his layers and to keep an accurate record of production. Trap nesting involves a considerable amount of time and is generally used by the more advanced poultry breeders in the endeavor to determine birds and strains of superior laying qualities.

Poultry culling is a method of distinguishing good layers from poor ones by examining the form of birds and studying the distance between pelvic bones and the distance between the breastbone and the pelvic arch. Other physical indications, such as color of comb, brightness of eye, early and late molting, color of legs and beak, aid in distinguishing laying fowls from "drones."

Poultry standardization is a method of poultry improvement which involves the selection of the breed considered most suitable for a locality and specialization in that breed by those interested in the plan. Such an activity results in uniform flocks, which attract buyers and bring various other benefits resulting from uniform and standardized methods. Poultry-standardization work is of educational as well as commercial value.

SELECTED MATERIAL ON LIVESTOCK IMPROVEMENT

PUBLICATIONS

Essentials of Animal Breeding. (Farmers' Bulletin 1167.)
Utility Value of Purebred Livestock. (Department Circular 235.)
A Handbook for the Better Feeding of Livestock. (Miscellaneous Circular 12.)
Runts and the Remedy. (Yearbook Separate 841.)
Cooperative Cow-Testing Associations. (Bureau of Animal Industry Circular 179.)
Cooperative Bull Associations. (Farmers' Bulletin 993.)

POSTERS

Which Way Is Your Livestock Going?
Purebred Sires and Herd Improvement.
For the Children's Sake.
48 Per Cent More Money from Purebreds.
Why Purebreds Excel.
Standardbred Poultry Pays Best.
Ten Points in Better Feeding.
Use Purebred Sires. (Sheep.)

MOTION PICTURES

Great Dairy Sires.
Sir Loin of T-Bone Ranch. (Beef Cattle.)
The Woolly West. (Sheep.)
Tale of Two Bulls. (Dairy.)
Birds of a Feather. (Poultry.)
Bob Farnum's Ton Litter. (Swine.)

LANTERN SLIDES

"Better Sires—Better Stock."

MIMEOGRAPHED MATERIAL

Quarterly Report on Progress of the "Better Sires—Better Stock" Campaign.
A Plan to Make the Country Scrub-Free. (Speech.)
Methods Used Successfully in Bringing About a Wider Use of Purebred Sires.
Outline for Conducting a Scrub-Sire Trial.
County Livestock-Survey Blank.
Current Livestock Feeding Problems and How Farmers Are Meeting Them.

